Weekly Report for 09/21/2015

Highlights

- Presented Injector Requirements and Plans at the DOE CD1 Review. (Kathy Harkay)

- Posted new technical note on preliminary heat load calculations for the helical SCU. (Kathy Harkay)

APS Renewal and Upgrade

- Participated in DOE CD1 Review. Presented Injector Requirements and Plans. (Kathy Harkay)

- Added beam shaking to CERN FASTION code. Preliminary results show shaking to be much less effective at clearing ions than implied by the SLAC ion code. Also fixed a bug in the longitudinal motion. (Joe Calvey)

- Discussed beam loading and RF feedback with T. Berenc. Running preliminary simulations for the PAR using the RFMODE element. (Joe Calvey)

- Optics design of high beta injection cell for APS-U 3PW-V6 lattice, also for 42pm and 53pm lattices with reverse bends. (Yipeng Sun)

- MOGA optimization with high beta injection cell of APS-U 3PW-V6 lattice, also for 53pm lattices with reverse bends. (Yipeng Sun)

- Presented work on impedance and collective effects for the CD-1 review. (Ryan Lindberg)

- Attend APS-U CD-1 DOE review. (Aimin Xiao)

- Analyzed simulation results for injection beam with collimator. (Aimin Xiao)

MCR Operations

Storage Ring Operations

- Organized, through C-Y Yao, getting the S4 sum signal reconnected to the tune mux for use in longitudinal instability studies. (Kathy Harkay)

- Discussed the changes to the use of X-ray BPMs with the Users at 32-ID after the second undulator was installed. Passed the information on to Shang so she could update the gap scan tools. (Karen Schroeder)

Linac Operations

- Start-Up activities that included verifying the operation of the linac thermionic rf guns and making new files. (Stan Pasky)

- Friday met with Yine Sun to discuss her visit with with Sasha Gilevich during Yine's trip to SLAC. Gilevich is one of several people responsible for laser operations at LCLS and works in Steve Edstrom's group. (Jeff Dooling)

- Yine brought back hardware information which will be useful as we implement cathode cleaning and control. (Jeff Dooling)

MCR Operations administrative/misc.

- Attended OPS Directorate and gave updates as to how start-up was progressing. (Karen Schroeder)

- Informed several operators of changes made during the shutdown so they could update MEDM displays, alarm handlers, etc. (Karen Schroeder)

• Reviewed and approved non-RSS SR work requests. (Karen Schroeder)

• Performed final walkthrough of tunnels and ssisted MCR with tunnel closures. (Karen Schroeder)

• Replied to a couple of questions about the long-range schedule and requested that the webmaster move FY2015 to archive and the FY2016 be made the current schedule (Karen Schroeder)

• Reviewed the Top-up file for correct start and and end dates/times as a second check for Flood (Karen Schroeder)

• Led daily 4 o'clock meetings. (Karen Schroeder)

APS Machine Studies

Storage Ring Studies

• Monitored SCU0 and SCU1 chamber temperatures during rf conditioning, and confirmed they were comparable with the May 2015 startup. (Kathy Harkay)

• Tested CollectRFSpectrum script with MXA, with L. Emery, H. Shang. (Kathy Harkay)

• Develop new APS optics for small round physical aperture at helical SCU S32. (Yipeng Sun)

• Assisted Shang with testing some changes to various PEMS, tools, etc. (Karen Schroeder)

• Updated machine studies schedule with changes as needed/requested. (Karen Schroeder)

• Assisted the MCR with loading BPLD limits when they were having difficulty getting them to load. (Karen Schroeder)

• Monitored the RF Cavity Conditioning without beam and with beam. (Karen Schroeder)

• Assisted the MCR with storing beam when there were difficulties. (Karen Schroeder)

• Updated RTFB and Datapool orbit correction configurations to take into acount the renaming of S2A:P0 to S1C:P0, as well as removing bpms which were behaving badly. (Karen Schroeder)

• Co-ordinated the study with shutters open with FC and MCR. (Karen Schroeder)

• Formed a study plan for next week machine's start up. (Aimin Xiao)

APS Machine Research and Development

Storage Ring Research and Development

• Completed preliminary dipole radiation incident power calculations for a helical SCU in the APS. Analyzed with and without a photon absorber, and both hard-edge and fringe field effect. (Kathy Harkay)

• Analyzed the beam orbit for the abort kicker study on 8/19. Post-study analysis showed that the vertical correctors upstream of ID1 (S39 and S40) were different by up to 20 A compared to the nominal User orbit. The tentative conclusion is that a large vertical orbit difference may have contributed to increased beam losses at ID1 and the SCU1 quench. (Kathy Harkay)

Linac Research and Development

• Visited LCLS-I driver laser lab. Discussed with Sasha Gilevich on drive laser spot size, position,

intensity control, UV laser pulse length measurements. Communicated info learned with Jeff Dooling. (Yin-e Sun)

• Discussed with F. Zhou, P. Emma of SLAC on copper cathode QE an laser cathode cleaning. (Yin-e Sun)

• Installed a new L2 lens (f=+20 cm) on an astigmatic mount in the telescope between regen and compressor to obtain a smaller spot size at the doubling crystals. (Jeff Dooling)

• Found the IR pulse width had increased to 5 ps, rms. Adjusted HRR position in the compressor to bring the pulse width back to 2.5 ps. (Jeff Dooling)

APS Machine Software

Storage Ring

• modified SRFillHistory: added sorting to SR downtime data to remove duplicate rows, thus remove the extra (fake) downtime (Hairong Shang)

Injectors

• removed non-exsit scdu pvs from booster SCR, updated makeBoosterReqFile script and booster SCR request template (Hairong Shang)

• wrote makeBBPMWaveformReqFile fpr making booster BSP100 bpm waveform SCR request file. (Hairong Shang)

• fixed bug in BoosterCorrectorControlNew when getting selected corrector list and corrected the missing corrector list for both plans, and added button to bring up the medm screen of booster corrector waveform display. (Hairong Shang)

• modified APSMpBoosterSetFullPower, moved setting It:Bs:StartRamp2BsIpRngC mode before SCR restore, because it needs to be set twice to take effect. (Hairong Shang)

• tested booster new AFG correctors and ramp loading, reduced ramp update time from 25 seconds to 4 seconds. (Hairong Shang)

General

• helped Kathy with sdds command to sort the column of her sdds file by the value (the change difference of correctors) of each column (not sort by the column name) and did the plot of corrector position (s) by the change difference. This requires creating an SDDS file with sorted change difference and the corresponding column name, then sort the column of the original file by the column names provided in this file using sddssortcolumn./ (Hairong Shang)

• fixed a bug of "search" button of SCR (SaveCompareRestore) that it tried to pack the apsSCRlist widget which did not exist when no files were found. (Hairong Shang)

IOC/EPICS/Controls/Linux/Solaris/Linux Clusters/Data Loggers/Simulation software

• fixed a bug in computing beamline downtime that the maintenance was included when the beamline schedule contains maintenance time, also removed the duplicate lines in SR downtime computed from SRFillHistory; calculated the beamline downtime and submitted to 4th floor. Installed computeStationSRDownTime and computeDownTime so that other group can use it. (Hairong Shang)

Publications, papers and report

• Posted new technical note entitled: Preliminary evaluation of BM radiation power on the helical superconducting undulator (HSCU) chamber, APS_1689272 (Kathy Harkay)

• Started working on a technical report covering PAR ion measurements and simulations. (Joe Calvey)

• Completed and circulated a draft report on the simulation results of the effects of weld beads on the new 5 mm ID transition. The simulations predict that the weld beads will increase the impedance beyond that of the "nominal" transition, but perhaps not as much as the measurement indicated. (Ryan Lindberg)

• Started tech note describing spectral and profile measurements of the pump laser diodes. (Jeff Dooling)

Meetings, workshops, conferences, committees, LMS related, and reviews

• Participated in BNL Accelerator Test Facility (ATF) Users' Meeting as member of the Program Advisory Committee (PAC); reviewed ongoing and new proposals and contributed to the committee report. (Kathy Harkay)

• Conducted search committee work for TRIUMF ALD for Accelerators. (Kathy Harkay)

• Sept. 21 - 24: attended FACET-II CD-1 director's review. (Yin-e Sun)

• Sept 27 -Oct. 2: attended COOL Workshop 2015 at Jefferson Lab. (Yin-e Sun)

• Attended DOE CD-1 review. (Joe Calvey)

• Yipeng Sun, Alternative Lattice and options, APS-U DoE CD1 review, Sep 22-24 2015. (Yipeng Sun)

Education, Mentoring and outreach

• Advised Medani Sangroula in writing his research proposal for his PhD comprehensive exam to be scheduled before the end of the year. (Ryan Lindberg)

Safety and Required Training

• Attended ESH114 training. (Yin-e Sun)

Miscellaneous

• Tracking maintenance work request - the close out of Work Request and Radiation Safety System Critical Component Work Permits. Followed by verifying that validation have been completed prior to restore equipment to service. (Stan Pasky)

• Completed 2014/2015 accomplishment statement. (Stan Pasky)